

## Combustion Sources—Criteria Emissions

### #4 Boiler #6 Residual Oil

Criteria Pollutant Estimates, >100 MMBTU/hr (AP-42, Tables 1.3-1 and 1.3-2, 9/98)							
Pollutant							
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM
Emission Factor, lb/1000 gal	157 ✓	S	5.7 ✓	S	32 ✓	5 ✓	$9.19S + 3.22 + 1.5$
% S in fuel:							
0.5							
Maximum gal/hr							
650							
Maximum hrs/yr							
8,760							
Emissions, lb/hr No control	51.025 ✓		1.9 ✓		20.8 ✓	3.25 ✓	6.1 ✓
							0.7 ✓
Emissions, ton/yr No control	223.48 ✓		8.1139 ✓		91.10 ✓	14.24 ✓	26.5 ✓
							3.0 ✓

S = weight % sulfur  
in fuel

**#4 Boiler #2 Diesel**

Criteria Pollutant Estimates, >100 MMBTU/hr (AP-42, Tables 1.3-1 and 1.3-2, 9/98)

**Pollutant**

	<b>SO<sub>2</sub></b>		<b>SO<sub>3</sub></b>		<b>NO<sub>x</sub></b>	<b>CO</b>	<b>PM</b>	<b>TOC</b>
Emission Factor, lb/1000 gal	157 ✓	S	5.7 ✓	S	24 ✓	5 ✓	3.3 ✓	0.252 ✓
% S in fuel:								
0.5								
Maximum gal/hr								
650								
Maximum hrs/yr								
8,760								
Emissions, lb/hr No control	51.025		1.9		15.6 ✓	3.25	2.145	0.2 ✓
Emissions, ton/yr No control	223.48 ✓		8.1139 ✓		68.32 ✓	14.24 ✓	9.4 ✓	0.7 ✓

S = weight % sulfur  
in fuel

### #4 Boiler #4 Residual

Criteria Pollutant Estimates, >100 MMBTU/hr (AP-42, Table 1.3-1, 9/98)

	Pollutant							
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	TOC
Emission Factor, lb/1000 gal	150 ✓	S	5.7 ✓	S	47 ✓	5 ✓	8.5 ✓	1.04 ✓
% S in fuel:								
0.5								
Maximum gal/hr								
650								
Maximum hrs/yr								
8,760								
Emissions, lb/hr No control	48.75 ✓		1.9		30.55 ✓	3.25	5.53 ✓	0.7 ✓
Emissions, ton/yr No control	213.52 ✓		8.1139 ✓		133.8 ✓	14.24 ✓	24.20 ✓	3.0 ✓

S = weight % sulfur  
in fuel

**#4 Boiler #5 Residual**  
**Criteria Pollutant Estimates, >100 MMBTU/hr (AP-42, Table 1.3-1, 9/98)**

	Pollutant							
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	TOC
Emission Factor, lb/1000 gal	157 ✓	S	5.7 ✓	S	47 ✓	5 ✓	11.5 ✓	1.04 ✓
% S in fuel:								
0.5								
Maximum gal/hr								
650								
Maximum hrs/yr								
8,760								
Emissions, lb/hr No control	51.025		1.9		30.55	3.25	7.48	0.7
Emissions, ton/yr No control	223.48 ✓		8.1139 ✓		133.8 ✓	14.24 ✓	32.74 ✓	3.0 ✓

S = weight % sulfur  
in fuel

## #4 Boiler Natural Gas

Criteria Pollutant Estimates, &gt;100 MMBTU/hr (AP-42, Tables 1.4-1 (low NOx) and 1.4-2, 9/98)

Low NO<sub>x</sub> burner

	Pollutant							
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC
Emission Factor, lb/10 <sup>6</sup> scf	0.6 ✓				140 ✓	84 ✓	7.6 ✓	5.5 ✓
Maximum MMscf/hr								
0.136319								
Maximum hrs/yr								
8,760								
Emissions, lb/hr No control	0.08				19.1	11.45	1.04	0.75
Emissions, ton/yr No control	0.3558 ✓				83.66 ✓	50.15 ✓	4.56 ✓	3.29 ✓

### #4 Boiler Propane

Criteria Pollutant Estimates, >100 MMBTU/hr (AP-42, Table 1.5-1, 10/96)

	Pollutant								
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC	
Emission Factor, lb/1,000 gal	0.1	S			19	3.2	0.6	0.5	
S =									
0.002									
Maximum gal/hr									
1,050.00									
Maximum hrs/yr									
8,760									
Emissions, lb/hr No control	2.10E-04 1.575				19.95	3.36	0.63	0.53	
Emissions, ton/yr No control	9.20E-04 6.89				87.38	14.72	2.76	2.3	

S = sulfur fuel content in grains/100 ft<sup>3</sup>. At approximately 15 ppm or  $1.1 \times 10^{-5}$  weight fraction, S =  $(1.1 \times 10^{-5})(4.2 \text{ lb/gal})(78 \text{ gal/hr})(7,000 \text{ grain/lb})(100)/(60 \text{ min/hr})/(26,000 \text{ ft}^3/\text{min})$

= 0.002 grains/100 ft<sup>3</sup>

Note that the density is 4.2 lb/gal, and the exhaust flow rate is 26,000 ft<sup>3</sup>/min.

15 g/100 ft<sup>3</sup>

**#3 Boiler #6 Residual**

Criteria Pollutant Estimates, <100 MMBTU/hr (AP-42, Tables 1.3-1 and 1.3-2, 9/98)

Pollutant							
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM
Emission Factor, lb/1000 gal	157 ✓	S	5.7 2	S	32 55	5 ✓	9.19S + 3.22 + 1.5 10
% S in fuel:							
0.5							
Maximum gal/hr							
200							
Maximum hrs/yr							
3,185							
Emissions, lb/hr No control	15.7 ✓		0.6 .2		6.4 11	1 ✓	1.9 2.0
Emissions, ton/yr No control	25.00 ✓		0.9077 .32		10.19 17.52	1.59 ✓	3.0 3.19
S = weight % sulfur in fuel							

#3 Boiler #2 Diesel

Criteria Pollutant Estimates,<100 MMBTU/hr (AP-42, Tables 1.3-1 and 1.3-2, 9/98)

**#3 Boiler #4 Residual**  
**Criteria Pollutant Estimates, <100 MMBTU/hr (AP-42, Table 1.3-1, 9/98)**

	Pollutant						
	SO <sub>2</sub>	SO <sub>3</sub>	NOX	CO	PM	TOC	
Emission Factor, lb/1000 gal	150 ✓	S	5.7 2	S	47 20	5 ✓	8.5 ✓
% S in fuel:							
0.5							
Maximum gal/hr							
200							
Maximum hrs/yr							
3,185							
Emissions, lb/hr No control	15 ✓		0.6 2		9.4 4.0	1 ✓	1.7 ✓
Emissions, ton/yr No control	23.887 ✓		0.9077 .3185		14.96 6.37	1.59 ✓	2.71 ✓
S = weight % sulfur in fuel							0.3 ✓

## #3 Boiler #5 Residual

Criteria Pollutant Estimates, <100 MMBTU/hr (AP-42, Table 1.3-1, 9/98)

### #3 Boiler Natural Gas

Criteria Pollutant Estimates, <100 MMBTU/hr (AP-42, Tables 1.4-1 and 1.4-2, 9/98)

	Pollutant								
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC	
Emission Factor, lb/10 <sup>6</sup> scf	0.6 ✓				100 ✓	84 ✓	7.6 ✓	5.5 ✓	
Maximum MMscf/hr									
0.041899									
Maximum hrs/yr									
3,185									
Emissions, lb/hr No control	0.025✓				4.19 ✓	3.52 ✓	0.32 ✓	0.23 ✓	
Emissions, ton/yr No control	0.0398✓				6.67 ✓	5.61 ✓	0.51 ✓	0.37 ✓	

**#3 Boiler Propane**  
**Criteria Pollutant Estimates (AP-42, Tables 1.5-1, 10/96)**

	Pollutant						
	SO <sub>2</sub>	SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC
Emission Factor, lb/1,000 gal	0.1	S		19 ✓	3.2 ✓	0.6 ✓	0.5 ✓
S =							
0.002							
Maximum gal/hr							
320							
Maximum hrs/yr							
3,185							
Emissions, lb/hr No control	6.40E-05 418			6.08 ✓	1.02 ✓	0.19 ✓	0.16 ✓
Emissions, ton/yr No control	0.0001019 ,7644			9.68 ✓	1.63 ✓	0.31 ✓	0.3 ✓

S = sulfur fuel content in grains/100 ft<sup>3</sup>. At approximately 15 ppm or  $1.1 \times 10^{-5}$  weight fraction, S =  
 $(1.1 \times 10^{-5})(4.2 \text{ lb/gal})(78 \text{ gal/hr})(7,000 \text{ grain/lb})(100)/(60 \text{ min/hr})/(26,000 \text{ ft}^3/\text{min})$   
= 0.002 grains/100 ft<sup>3</sup>  
Note that the density is 4.2 lb/gal, and the exhaust flow rate is 26,000 ft<sup>3</sup>/min.

15 ppm

1027 Btu  
F<sub>6</sub><sup>3</sup>

8 MM Btu/hr

### Dryer Stage A

Criteria Pollutant Estimates, <100 MMBTU/hr (AP-42, Tables 1.4-1 and 1.4-2, 9/98)

	Pollutant							
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC
Emission Factor, lb/10 <sup>6</sup> scf	0.6				100	84	7.6	5.5
Maximum MMscf/hr								
0.007790								
Maximum hrs/yr								
8,760								
Emissions, lb/hr No control	0.0047				0.78	0.65	0.59	0.043
Emissions, ton/yr No control	0.021				3.42	2.85	0.26	0.19

Propane								
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC
Emission Factor, lb/1,000 gal	0.1	S			14	1.9	0.4	0.5
lb/hr					0.63	0.0859	0.018	0.023

45.2gph

3.2 MM Btu/hr

### Dryer Stage B

Criteria Pollutant Estimates, <100 MMBTU/hr (AP-42, Tables 1.4-1 and 1.4-2, 9/98)

	Pollutant								
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC	
Emission Factor, lb/10 <sup>6</sup> scf	0.6				100	84	7.6	5.5	
Maximum MMscf/hr 0.003116									
Maximum hrs/yr 8,760									
Emissions, lb/hr No control	0.002				0.31	0.26	0.024	0.017	
Emissions, ton/yr No control	0.008				1.36	1.14	0.10	0.075	

Propane	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC	
Emission Factor, lb/1,000 gal	0.1	S			14	1.9	0.4	0.5	
lb/hr					0.252	0.0342	0.0072	0.009	

18gph

3.2 MMBtu/hr

### Dryer Stage C

Criteria Pollutant Estimates, <100 MMBTU/hr (AP-42, Tables 1.4-1 and 1.4-2, 9/98)

	Pollutant								
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC	
Emission Factor, lb/10 <sup>6</sup> scf	0.6				100	84	7.6	5.5	
Maximum MMscf/hr 0.003116									
Maximum hrs/yr 8,760									
Emissions, lb/hr No control	0.002				0.31	0.26	0.024	0.017	
Emissions, ton/yr No control	0.008				1.36	1.14	0.10	0.075	

Propane	SO <sub>2</sub>	SO <sub>3</sub>	NO <sub>x</sub>	CO	PM	VOC	
Emission Factor, lb/1,000 gal	0.1	S		14	1.9	0.4	0.5
lb/hr				0.252	0.0342	0.0072	0.009

18gph

55 MMBtu/hr

### Secondary Dryer

Criteria Pollutant Estimates, <100 MMBTU/hr (AP-42, Tables 1.4-1 and 1.4-2, 9/98)

	Pollutant								
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC	
Emission Factor, lb/10 <sup>6</sup> scf	0.6 ✓				100 ✓	84 ✓	7.6 ✓	5.5 ✓	
Maximum MMscf/hr									
0.000536									
Maximum hrs/yr									
8,760									
Emissions, lb/hr No control	0.003				0.054	0.045	0.0041	0.003	
Emissions, ton/yr No control	0.013				0.237	0.197	0.018	0.013	

Propane	SO <sub>2</sub>	SO <sub>3</sub>	NO <sub>x</sub>	CO	PM	VOC	
Emission Factor, lb/1,000 gal	0.1	S		14	1.9	0.4	0.5
lb/hr				0.043	0.0059	0.00124	0.0016

3.1gph

8.25 MM Btu  
hr

### Space Heater South

Criteria Pollutant Estimates, <100 MMBTU/hr (AP-42, Tables 1.4-1 and 1.4-2, 9/98)

	Pollutant								
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC	
Emission Factor, lb/10 <sup>6</sup> scf	0.6✓				100✓	84 ✓	7.6 ✓	5.5✓	
Maximum MMscf/hr									
0.008033106									
Maximum hrs/yr									
6,048									
Emissions, lb/hr No control	0.0048				0.80	0.67	0.06	0.04	
Emissions, ton/yr No control	0.0145				2.43	2.04	0.18	0.1	

Propane	SO <sub>2</sub>		SO <sub>3</sub>	NO <sub>x</sub>	CO	PM	VOC
Emission Factor, lb/1,000 gal	0.1 ✓	S		19 ✓	3.2 ✓	0.6 ✓	0.5 ✓
lb/hr				0.798	0.1344	0.0252	0.021

42gph

8.25 mmBtu/hr

Space Heater North  
Criteria Pollutant Estimates, <100 MMBTU/hr (AP-42, Tables 1.4-1 and 1.4-2, 9/98)

	Pollutant								
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC	
Emission Factor, lb/10 <sup>6</sup> scf	0.6 ✓				100 ✓	84 ✓	7.6 ✓	5.5 ✓	
Maximum MMscf/hr									
0.008033106									
Maximum hrs/yr									
6,048									
Emissions, lb/hr No control	0.0048				0.80	0.67	0.06	0.04	
Emissions, ton/yr No control	0.0145				2.43	2.04	0.18	0.1	

Propane	SO <sub>2</sub>	SO <sub>3</sub>	NO <sub>x</sub>	CO	PM	VOC
Emission Factor, lb/1,000 gal	0.1	S	19	3.2	0.6	0.5
lb/hr			0.798	0.1344	0.0252	0.021

42gph

15.4 MM BTU/hr

**Space Heater East**  
Criteria Pollutant Estimates, <100 MMBTU/hr (AP-42, Tables 1.4-1 and 1.4-2, 9/98)

	Pollutant							
	SO <sub>2</sub>		SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC
Emission Factor, lb/10 <sup>6</sup> scf	0.6 ✓				100 ✓	84	7.6 ✓	5.5 ✓
Maximum MMscf/hr 0.014995131								
Maximum hrs/yr 6,048								
Emissions, lb/hr No control	0.0089				1.50	1.26	0.11	0.08
Emissions, ton/yr No control	0.0272				4.53	3.81	0.34	0.25

Propane	SO <sub>2</sub>	SO <sub>3</sub>	NO <sub>x</sub>	CO	PM	VOC
Emission Factor, lb/1,000 gal lb/hr	0.1	S	19	3.2	0.6	0.5
			1.501	0.2528	0.0474	0.0395

79gph

2 MMBtu/hr

### Miscellaneous Space Heaters

Criteria Pollutant Estimates, <100 MMBTU/hr (AP-42, Tables 1.4-1 and 1.4-2, 9/98)

	Pollutant						
	SO <sub>2</sub>	SO <sub>3</sub>		NO <sub>x</sub>	CO	PM	VOC
Emission Factor, lb/10 <sup>6</sup> scf	0.6 ✓			100 ✓	84	7.6 ✓	5.5 ✓
Maximum MMscf/hr 0.001947							
Maximum hrs/yr 6,048							
Emissions, lb/hr No control	0.001			0.19	0.16	0.0147	0.011
Emissions, ton/yr No control	0.0035			0.57	0.48	0.0447	0.033

Propane	SO <sub>2</sub>	SO <sub>3</sub>	NO <sub>x</sub>	CO	PM	VOC
Emission Factor, lb/1,000 gal	0.1	S	19	3.2	0.6	0.5
lb/hr			0.209	0.0352	0.0066	0.0055
11gph						

**Grain Loading for ISUP Fuel Burning Sources<sup>a</sup>**

Source	Fuel	F-factor <sup>b</sup> (dscf/MMBTU)	Heat Capacity (BTU/gal) Except NG is BTU/scf	EF PM (lb/Mgal) Except NG is lb/MMscf <sup>b</sup>	Grain Loading, grains/dscf @ 3% O2	Grain Loading Standard, grain/dscf	Meet Grain Loading Standard?
Boiler # 4	#2 Diesel	9199.5	140,000	3.3	0.013	0.05	Y
Boiler # 4	#4 Residual	9199.5	150,000	8.5	0.031	0.05	Y
Boiler # 4	#5 Residual	9199.5	150,000	11.5	0.043	0.05	Y
Boiler # 4	#6 Residual	9199.5	150,000	9.3	0.034	0.05	Y
Boiler # 4	Natural Gas	8715.3	1,050	7.6	0.0042	0.015	Y
Boiler # 4	Propane	8715.3	91,000	0.6	0.0039	0.05	Y
Boiler # 3	#2 Diesel	9199.5	140,000	3.3	0.013	0.05	Y
Boiler # 3	#4 Residual	9199.5	150,000	8.5	0.031	0.05	Y
Boiler # 3	#5 Residual	9199.5	150,000	11.5	0.043	0.05	Y
Boiler # 3	#6 Residual	9199.5	150,000	9.3	0.034	0.05	Y
Boiler # 3	Natural Gas	8715.3	1,050	7.6	0.0042	0.015	Y
Boiler # 3	Propane	8715.3	91,000	0.6	0.0039	0.05	Y
Space Heater East	Natural Gas	8715.3	1,050	7.6	0.0042	0.015	Y
Space Heater East	Propane	8715.3	91,000	0.6	0.0039	0.05	Y
Space Heater North	Natural Gas	8715.3	1,050	7.6	0.0042	0.015	Y
Space Heater North	Propane	8715.3	91,000	0.6	0.0039	0.05	Y
Space Heater South	Natural Gas	8715.3	1,050	7.6	0.0042	0.015	Y
Space Heater South	Propane	8715.3	91,000	0.6	0.0039	0.05	Y
Misc Heater South	Natural Gas	8715.3	1,050	7.6	0.0042	0.015	Y
Misc Heater South	Propane	8715.3	91,000	0.6	0.0039	0.05	Y
Fluidized Bed Dryer	Natural Gas	8715.3	1,050	7.6	0.0042	0.015	Y
Fluidized Bed Dryer	Propane	8715.3	91,000	0.6	0.0039	0.05	Y
Dryer Stage A	Natural Gas	8715.3	1,050	7.6	0.0042	0.015	Y
Dryer Stage A	Propane	8715.3	91,000	0.6	0.0039	0.05	Y
Dryer Stage B	Natural Gas	8715.3	1,050	7.6	0.0042	0.015	Y
Dryer Stage B	Propane	8715.3	91,000	0.6	0.0039	0.05	Y
Dryer Stage C	Natural Gas	8715.3	1,050	7.6	0.0042	0.015	Y
Dryer Stage C	Propane	8715.3	91,000	0.6	0.0039	0.05	Y
Secondary Dryer	Natural Gas	8715.3	1,050	7.6	0.0042	0.015	Y
Secondary Dryer	Propane	8715.3	91,000	0.6	0.0039	0.05	Y

<sup>a</sup>See attached MathCad pages for all calculations.

<sup>b</sup>From AP-42

Idaho Supreme 10000 gal diesel  
Idaho Supreme

Horizontal Tank  
Firth, Idaho

**TANKS 4.0**  
**Emissions Report - Summary Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: Idaho Supreme 10000 gal diesel  
City: Firth  
State: Idaho  
Company: Idaho Supreme  
Type of Tank: Horizontal Tank  
Description:

**Tank Dimensions**

Shell Length (ft):	27.40
Diameter (ft):	8.00
Volume (gallons):	10,000.00
Turnovers:	0.00
Net Throughput (gal/yr):	10,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

**Paint Characteristics**

Shell Color/Shade: White/White  
Shell Condition: Good

**Breather Vent Settings**

Vacuum Settings (psig): -0.03  
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Pocatello, Idaho (Avg Atmospheric Pressure = 12.53 psia)

Idaho Supreme 10000 gal diesel  
Idaho Supreme

Horizontal Tank  
Firth, Idaho

**TANKS 4.0**  
**Emissions Report - Summary Format**  
**Liquid Contents of Storage Tank**

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F)			Liquid Bulk Temp. (deg F)	Vapor Pressures (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	48.21	41.93	54.49	46.37	0.0044	0.0035	0.0054	130.0000			188.00	Option 5: A=12.101, B=8907

Idaho Supreme 10000 gal diesel  
Idaho Supreme

Horizontal Tank  
Firth, Idaho

**TANKS 4.0**  
**Emissions Report - Summary Format**  
**Individual Tank Emission Totals**

**Annual Emissions Report**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.13	1.49	1.62

Idaho Supreme 16,000 gal Tank  
Idaho Supreme

Vertical Fixed Roof Tank  
Firth, Idaho

**TANKS 4.0**  
**Emissions Report - Summary Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: Idaho Supreme 16,000 gal Tank  
City: Firth  
State: Idaho  
Company: Idaho Supreme  
Type of Tank: Vertical Fixed Roof Tank  
Description:

**Tank Dimensions**

Shell Height (ft):	21.00
Diameter (ft):	11.50
Liquid Height (ft):	20.59
Avg. Liquid Height (ft):	11.00
Volume (gallons):	16,000.00
Turnovers:	465.38
Net Throughput (gal/yr):	7,446,000.00
Is Tank Heated (y/n):	Y

**Paint Characteristics**

Shell Color/Shade: White/White  
Shell Condition: Good  
Roof Color/Shade: White/White  
Roof Condition: Good

**Roof Characteristics**

Type: Dome  
Height (ft): 0.00  
Radius (ft) (Dome Roof): 0.00

**Breather Vent Settings**

Vacuum Settings (psig): 0.00  
Pressure Settings (psig): 0.00

Meteorological Data used in Emissions Calculations: Pocatello, Idaho (Avg Atmospheric Pressure = 12.53 psia)

Idaho Supreme 16,000 gal Tank  
Idaho Supreme

Vertical Fixed Roof Tank  
Firth, Idaho

**TANKS 4.0**  
**Emissions Report - Summary Format**  
**Liquid Contents of Storage Tank**

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F)			Liquid Bulk Temp. (deg F)	Vapor Pressures (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	48.21	41.93	54.49	46.37	0.0044	0.0035	0.0054	130.0000			188.00	Option 5: A=12.101, B=8907

Idaho Supreme 16,000 gal Tank  
Idaho Supreme

Vertical Fixed Roof Tank  
Firth, Idaho

**TANKS 4.0**  
**Emissions Report - Summary Format**  
**Individual Tank Emission Totals**

**Annual Emissions Report**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	23.19	1.05	- 24.25

Idaho Supreme 20,000 gal Tank  
Idaho Supreme

Vertical Fixed Roof Tank  
Firth, Idaho

**TANKS 4.0**  
**Emissions Report - Summary Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: Idaho Supreme 20,000 gal Tank  
City: Firth  
State: Idaho  
Company: Idaho Supreme  
Type of Tank: Vertical Fixed Roof Tank  
Description:

**Tank Dimensions**

Shell Height (ft):	31.20
Diameter (ft):	10.50
Liquid Height (ft):	30.00
Avg. Liquid Height (ft):	20.00
Volume (gallons):	20,000.00
Turnovers:	3.50
Net Throughput (gal/yr):	70,000.00
Is Tank Heated (y/n):	N

**Paint Characteristics**

Shell Color/Shade: White/White  
Shell Condition: Good  
Roof Color/Shade: White/White  
Roof Condition: Good

**Roof Characteristics**

Type: Dome  
Height (ft): 0.00  
Radius (ft) (Dome Roof): 0.00

**Breather Vent Settings**

Vacuum Settings (psig): -0.03  
Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Pocatello, Idaho (Avg Atmospheric Pressure = 12.53 psia)

Idaho Supreme 20,000 gal Tank  
Idaho Supreme

Vertical Fixed Roof Tank  
Firth, Idaho

**TANKS 4.0**  
**Emissions Report - Summary Format**  
**Liquid Contents of Storage Tank**

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F)			Liquid Bulk Temp. (deg F)	Vapor Pressures (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	48.21	41.93	54.49	46.37	0.0044	0.0035	0.0054	130.0000			188.00	Option 5: A=12.101, B=8907

Idaho Supreme 20,000 gal Tank  
Idaho Supreme

Vertical Fixed Roof Tank  
Firth, Idaho

**TANKS 4.0**  
**Emissions Report - Summary Format**  
**Individual Tank Emission Totals**

**Annual Emissions Report**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.94	1.75	2.69

Idaho Supreme 30,000 Tank  
Idaho Supreme

Vertical Fixed Roof Tank  
Firth, Idaho

**TANKS 4.0**  
**Emissions Report - Summary Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: Idaho Supreme 30,000 Tank  
City: Firth  
State: Idaho  
Company: Idaho Supreme  
Type of Tank: Vertical Fixed Roof Tank  
Description:

**Tank Dimensions**

Shell Height (ft):	26.00
Diameter (ft):	14.00
Liquid Height (ft):	25.00
Avg. Liquid Height (ft):	14.00
Volume (gallons):	28,788.51
Turnovers:	258.64
Net Throughput (gal/yr):	7,446,000.00
Is Tank Heated (y/n):	N

**Paint Characteristics**

Shell Color/Shade: White/White  
Shell Condition: Good  
Roof Color/Shade: White/White  
Roof Condition: Good

**Roof Characteristics**

Type:	Dome
Height (ft):	0.00
Radius (ft) (Dome Roof):	0.00

**Breather Vent Settings**

Vacuum Settings (psig):	-0.03
Pressure Settings (psig):	0.03

Meteorological Data used in Emissions Calculations: Pocatello, Idaho (Avg Atmospheric Pressure = 12.53 psia)

Idaho Supreme 30,000 Tank  
Idaho Supreme

Vertical Fixed Roof Tank  
Firth, Idaho

**TANKS 4.0**  
**Emissions Report - Summary Format**  
**Liquid Contents of Storage Tank**

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F)			Liquid Bulk Temp. (deg F)	Vapor Pressures (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	48.21	41.93	54.49	46.37	0.0044	0.0035	0.0054	130.0000			188.00	Option 5: A=12.101, B=8907

Idaho Supreme 30,000 Tank  
Idaho Supreme

Vertical Fixed Roof Tank -  
Firth, Idaho

**TANKS 4.0**  
**Emissions Report - Summary Format**  
**Individual Tank Emission Totals**

**Annual Emissions Report**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	28.36	3.38	31.74

For 2 tanks, the total emissions are 63.5 lb/yr.

## HAZARDOUS AIR POLLUTANT CALCULATIONS

**TABLE 1. BOILER #4  
FUEL OIL**

Pollutant	Emission Factor (lb/1,000 gal)	Emissions (lb/hr)	Emissions (tons/yr)
Antimony	5.25E-03	3.41E-03	1.49E-02
Acenaphtene	2.11E-05	1.37E-05	6.01E-05
Acenaphthylene	2.53E-07	1.64E-07	7.20E-07
Anthracene	1.22E-06	7.93E-07	3.47E-06
Arsenic	1.32E-03	8.58E-04	3.76E-03
Benz(a)anthracene	4.01E-06	2.61E-06	1.14E-05
Benzene	2.14E-04	1.39E-04	6.09E-04
Benzo(b,k)fluoranthene	1.48E-06	9.62E-07	4.21E-06
Benzo(g,h,i)perylene	2.38E-06	1.55E-06	6.78E-06
Beryllium*	3*	4.20E-04	2.E-03
Cadmium	3.98E-04	2.59E-04	1.13E-03
Chromium	8.45E-04	5.49E-04	2.41E-03
Chromium VI	2.48E-04	1.61E-04	7.06E-04
Chrysene	2.38E-06	1.55E-06	6.78E-06
Cobalt	6.02E-03	3.91E-03	1.71E-02
Dibenzo(a,h)anthracene	1.67E-06	1.09E-06	4.75E-06
Ethylbenzene	6.36E-05	4.13E-05	1.81E-04
Fluoranthene	4.84E-06	3.15E-06	1.38E-05
Fluorene	4.47E-06	2.91E-06	1.27E-05
Formaldehyde	3.30E-02	2.15E-02	9.40E-02
Indeno(1,2,3-cd)pyrene	2.14E-06	1.39E-06	6.09E-06
Lead	1.51E-03	9.82E-04	4.30E-03
Manganese	3.00E-03	1.95E-03	8.54E-03
Mercury*	3*	4.20E-04	2.E-03
Naphthalene	1.13E-03	7.35E-04	3.22E-03
Nickel	8.45E-02	5.49E-02	2.41E-01
OCDD	3.10E-09	2.02E-09	8.83E-09
o-Xylene	1.09E-04	7.09E-05	3.10E-04
Phenanthrene	1.05E-05	6.83E-06	2.99E-05
Phosphorous	9.46E-03	6.15E-03	2.69E-02
Pyrene	4.25E-06	2.76E-06	1.21E-05
Selenium*	15*	2.10E-03	9.2E-03
Toluene	6.20E-03	4.03E-03	1.77E-02

Notes: \* Emission factor units in pounds per 1,000,000 MMBTU.

Emission estimates represent maximum emissions based on burning #2, #4, #5, or #6 fuel oil, and based on AP-42 Tables 1.3-9, 1.3-10, and 1.3-11.

Emissions based on boiler operating with maximum fuel usage of 650 gal/hour.

Emissions based on 8,760 hours of operation.

## HAZARDOUS AIR POLLUTANT CALCULATIONS

**TABLE 3. BOILER #4**

**NATURAL GAS**

Pollutant	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)
2-Methylnaphthalene	2.4E-05	3.3E-06	1.4E-05
3-Methylchloranthrene	1.8E-06	2.5E-07	1.1E-06
7,12-Dimethyl-benz(a)anthracene	1.6E-05	2.2E-06	9.6E-06
Acenaphthene	1.8E-06	2.5E-07	1.1E-06
Anthracene	2.4E-06	3.3E-07	1.4E-06
Benz(a)anthracene	1.8E-06	2.5E-07	1.1E-06
Benzene	2.1E-03	2.9E-04	1.3E-03
Benzo(a)pyrene	1.2E-06	1.6E-07	7.2E-07
Benzo(b)fluoranthene	1.8E-06	2.5E-07	1.1E-06
Benzo(g,h,i)perylene	1.2E-06	1.6E-07	7.2E-07
Benzo(k)fluoranthene	1.8E-06	2.5E-07	1.1E-06
Chrysene	1.8E-06	2.5E-07	1.1E-06
Dibenzo(a,h)anthracene	1.2E-06	1.6E-07	7.2E-07
Dichlorobenzene	1.2E-03	1.6E-04	7.2E-04
Fluoranthene	3.0E-06	4.1E-07	1.8E-06
Fluorene	2.8E-06	3.8E-07	1.7E-06
Formaldehyde	7.5E-02	1.0E-02	4.5E-02
Hexane	1.8E+00	2.5E-01	1.1E+00
Indeno(1,2,3-cd)pyrene	1.8E-06	2.5E-07	1.1E-06
Naphthalene	6.1E-04	8.3E-05	3.6E-04
Phenanathrene	1.7E-05	2.3E-06	1.0E-05
Pyrene	5.0E-06	6.8E-07	3.0E-06
Toluene	3.4E-03	4.6E-04	2.0E-03
Arsenic	2.0E-04	2.7E-05	1.2E-04
Beryllium	1.2E-05	1.6E-06	7.2E-06
Cadmium	1.1E-03	1.5E-04	6.6E-04
Chromium	1.4E-03	1.9E-04	8.4E-04
Cobalt	8.4E-05	1.1E-05	5.0E-05
Manganese	3.8E-04	5.2E-05	2.3E-04
Mercury	2.6E-04	3.5E-05	1.6E-04
Nickel	2.1E-03	2.9E-04	1.3E-03
Selenium	2.4E-05	3.3E-06	1.4E-05

Source: AP-42, Tables 1.4-3 and 1.4-4, 7/98 edition.

Notes: Emissions based on boiler operating at maximum rate of 140 MMBTU/hr.

Assumed 1,027 BTU/scf heat content of natural gas.

Emissions based on 8,760 hours of operation.

## HAZARDOUS AIR POLLUTANT CALCULATIONS

**TABLE 1. BOILER #3**

**FUEL OIL**

Pollutant	Emission Factor (lb/1,000 gal)	Emissions (lb/hr)	Emissions (tons/yr)
Antimony	5.25E-03	1.05E-03	1.67E-03
Acenaphtene	2.11E-05	4.22E-06	6.72E-06
Acenaphthylene	2.53E-07	5.06E-08	8.06E-08
Anthracene	1.22E-06	2.44E-07	3.89E-07
Arsenic	1.32E-03	2.64E-04	4.20E-04
Benz(a)anthracene	4.01E-06	8.02E-07	1.28E-06
Benzene	2.14E-04	4.28E-05	6.82E-05
Benzo(b,k)fluoranthene	1.48E-06	2.96E-07	4.71E-07
Benzo(g,h,i)perylene	2.38E-06	4.76E-07	7.58E-07
Beryllium*	3*	1.E-04	2.06E-04
Cadmium	3.98E-04	7.96E-05	1.27E-04
Chromium	8.45E-04	1.69E-04	2.69E-04
Chromium VI	2.48E-04	4.96E-05	7.90E-05
Chrysene	2.38E-06	4.76E-07	7.58E-07
Cobalt	6.02E-03	1.20E-03	1.92E-03
Dibenzo(a,h)anthracene	1.67E-06	3.34E-07	5.32E-07
Ethylbenzene	6.36E-05	1.27E-05	2.03E-05
Fluoranthene	4.84E-06	9.68E-07	1.54E-06
Fluorene	4.47E-06	8.94E-07	1.42E-06
Formaldehyde	3.30E-02	6.60E-03	1.05E-02
Indeno(1,2,3-cd)pyrene	2.14E-06	4.28E-07	6.82E-07
Lead	1.51E-03	3.02E-04	4.81E-04
Manganese	3.00E-03	6.00E-04	9.56E-04
Mercury*	3*	1.E-04	2.06E-04
Naphthalene	1.13E-03	2.26E-04	3.60E-04
Nickel	8.45E-02	1.69E-02	2.69E-02
OCDD	3.10E-09	6.20E-10	9.87E-10
o-Xylene	1.09E-04	2.18E-05	3.47E-05
Phenanthrene	1.05E-05	2.10E-06	3.34E-06
Phosphorous	9.46E-03	1.89E-03	3.01E-03
Pyrene	4.25E-06	8.50E-07	1.35E-06
Selenium*	15*	6.E-04	1.03E-03
Toluene	6.20E-03	1.24E-03	1.97E-03

Notes: \* Emission factor units in pounds per 1,000,000 MMBTU.

Emission estimates represent maximum emissions based on burning #2, #4, #5, or #6 fuel oil, and based on AP-42 Tables 1.3-9, 1.3-10, and 1.3-11.

Emissions based on boiler operating with maximum fuel usage of 200 gal/hour.

Emissions based on 3,185 hours of operation.

## HAZARDOUS AIR POLLUTANT CALCULATIONS

**TABLE 3. BOILER #3**

### NATURAL GAS

Pollutant	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)
2-Methylnaphthalene	2.4E-05	1.0E-06	1.6E-06
3-Methylchloranthrene	1.8E-06	7.5E-08	1.2E-07
7,12-			
Dimethylbenz(a)anthracene	1.6E-05	6.7E-07	1.1E-06
Acenaphthene	1.8E-06	7.5E-08	1.2E-07
Anthracene	2.4E-06	1.0E-07	1.6E-07
Benz(a)anthracene	1.8E-06	7.5E-08	1.2E-07
Benzene	2.1E-03	8.8E-05	1.4E-04
Benzo(a)pyrene	1.2E-06	5.0E-08	8.0E-08
Benzo(b)fluoranthene	1.8E-06	7.5E-08	1.2E-07
Benzo(g,h,i)perylene	1.2E-06	5.0E-08	8.0E-08
Benzo(k)fluoranthene	1.8E-06	7.5E-08	1.2E-07
Chrysene	1.8E-06	7.5E-08	1.2E-07
Dibenzo(a,h)anthracene	1.2E-06	5.0E-08	8.0E-08
Dichlorobenzene	1.2E-03	5.0E-05	8.0E-05
Fluoranthene	3.0E-06	1.3E-07	2.0E-07
Fluorene	2.8E-06	1.2E-07	1.9E-07
Formaldehyde	7.5E-02	3.1E-03	5.0E-03
Hexane	1.8E+00	7.5E-02	1.2E-01
Indeno(1,2,3-cd)pyrene	1.8E-06	7.5E-08	1.2E-07
Naphthalene	6.1E-04	2.6E-05	4.1E-05
Phenanathrene	1.7E-05	7.1E-07	1.1E-06
Pyrene	5.0E-06	2.1E-07	3.3E-07
Toluene	3.4E-03	1.4E-04	2.3E-04
Arsenic	2.0E-04	8.4E-06	1.3E-05
Beryllium	1.2E-05	5.0E-07	8.0E-07
Cadmium	1.1E-03	4.6E-05	7.3E-05
Chromium	1.4E-03	5.9E-05	9.3E-05
Cobalt	8.4E-05	3.5E-06	5.6E-06
Manganese	3.8E-04	1.6E-05	2.5E-05
Mercury	2.6E-04	1.1E-05	1.7E-05
Nickel	2.1E-03	8.8E-05	1.4E-04
Selenium	2.4E-05	1.0E-06	1.6E-06

Source: AP-42, Tables 1.4-3 and 1.4-4, 7/98 edition.

Notes: Emissions based on boiler operating at maximum rate of 43.03 MMBTU/hr.

Assumed 1,027 BTU/scf heat content of natural gas.

Emissions based on 3,185 hours of operation.

## HAZARDOUS AIR POLLUTANTS CALCULATIONS

**TABLE 1. FLUID BED DRYER  
NATURAL GAS**

Pollutant	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)
2-Methylnaphthalene	2.4E-05	1.6E-07	7.2E-07
3-Methylchloranthrene	1.8E-06	1.2E-08	5.4E-08
7,12-Dimethylbenz(a)anthracene	1.6E-05	1.1E-07	4.8E-07
Acenaphthene	1.8E-06	1.2E-08	5.4E-08
Anthracene	2.4E-06	1.6E-08	7.2E-08
Benz(a)anthracene	1.8E-06	1.2E-08	5.4E-08
Benzene	2.1E-03	1.4E-05	6.3E-05
Benzo(a)pyrene	1.2E-06	8.2E-09	3.6E-08
Benzo(b)fluoranthene	1.8E-06	1.2E-08	5.4E-08
Benzo(g,h,i)perylene	1.2E-06	8.2E-09	3.6E-08
Benzo(k)fluoranthene	1.8E-06	1.2E-08	5.4E-08
Chrysene	1.8E-06	1.2E-08	5.4E-08
Dibenz(a,h)anthracene	1.2E-06	8.2E-09	3.6E-08
Dichlorobenzene	1.2E-03	8.2E-06	3.6E-05
Fluoranthene	3.0E-06	2.0E-08	9.0E-08
Fluorene	2.8E-06	1.9E-08	8.4E-08
Formaldehyde	7.5E-02	5.1E-04	2.2E-03
Hexane	1.8E+00	1.2E-02	5.4E-02
Indeno(1,2,3-cd)pyrene	1.8E-06	1.2E-08	5.4E-08
Naphthalene	6.1E-04	4.2E-06	1.8E-05
Phenanathrene	1.7E-05	1.2E-07	5.1E-07
Pyrene	5.0E-06	3.4E-08	1.5E-07
Toluene	3.4E-03	2.3E-05	1.0E-04
Arsenic	2.0E-04	1.4E-06	6.0E-06
Beryllium	1.2E-05	8.2E-08	3.6E-07
Cadmium	1.1E-03	7.5E-06	3.3E-05
Chromium	1.4E-03	9.5E-06	4.2E-05
Cobalt	8.4E-05	5.7E-07	2.5E-06
Manganese	3.8E-04	2.6E-06	1.1E-05
Mercury	2.6E-04	1.8E-06	7.8E-06
Nickel	2.1E-03	1.4E-05	6.3E-05
Selenium	2.4E-05	1.6E-07	7.2E-07

Source: AP-42, Tables 1.4-3 and 1.4-4, 7/98 edition.

Notes: Emissions based on 2 FBDs @ 3.5 MMBTU/hr.  
 Assumed 1,027 BTU/scf heat content of natural gas.  
 8,760 hours/year operation.



## HAZARDOUS AIR POLLUTANT CALCULATIONS

**TABLE 1. SPACE HEATERS N, E, & S - NON-CARCINOGENS**  
**NATURAL GAS**

Pollutant	Emission Factor (lb/1,000,000 scf)	Emissions SH South (lb/hr)	Emissions SH North (lb/hr)	Emissions SH East (lb/hr)	Emissions SH South tpy	Emissions SH North tpy	Emissions SH East tpy
2-Methylnaphthalene	2.4E-05	1.9E-07	1.9E-07	3.6E-07	5.8E-07	5.8E-07	1.1E-06
3-Methylchloranthrene	1.8E-06	1.4E-08	1.4E-08	2.7E-08	4.4E-08	4.4E-08	8.2E-08
7,12-Dimethyl-benz(a)anthracene	1.6E-05	1.3E-07	1.3E-07	2.4E-07	3.9E-07	3.9E-07	7.3E-07
Acenaphthene	1.8E-06	1.4E-08	1.4E-08	2.7E-08	4.4E-08	4.4E-08	8.2E-08
Anthracene	2.4E-06	1.9E-08	1.9E-08	3.6E-08	5.8E-08	5.8E-08	1.1E-07
Benz(a)anthracene	1.8E-06	1.4E-08	1.4E-08	2.7E-08	4.4E-08	4.4E-08	8.2E-08
Benzene	2.1E-03	1.7E-05	1.7E-05	3.1E-05	5.1E-05	5.1E-05	9.5E-05
Benzo(a)pyrene	1.2E-06	9.6E-09	9.6E-09	1.8E-08	2.9E-08	2.9E-08	5.4E-08
Benzo(b)fluoranthene	1.8E-06	1.4E-08	1.4E-08	2.7E-08	4.4E-08	4.4E-08	8.2E-08
Benzo(g,h,i)perylene	1.2E-06	9.6E-09	9.6E-09	1.8E-08	2.9E-08	2.9E-08	5.4E-08
Benzo(k)fluoranthene	1.8E-06	1.4E-08	1.4E-08	2.7E-08	4.4E-08	4.4E-08	8.2E-08
Chrysene	1.8E-06	1.4E-08	1.4E-08	2.7E-08	4.4E-08	4.4E-08	8.2E-08
Dibenzo(a,h)anthracene	1.2E-06	9.6E-09	9.6E-09	1.8E-08	2.9E-08	2.9E-08	5.4E-08
Dichlorobenzene	1.2E-03	9.6E-06	9.6E-06	1.8E-05	2.9E-05	2.9E-05	5.4E-05
Fluoranthene	3.0E-06	2.4E-08	2.4E-08	4.5E-08	7.3E-08	7.3E-08	1.4E-07
Fluorene	2.8E-06	2.2E-08	2.2E-08	4.2E-08	6.8E-08	6.8E-08	1.3E-07
Formaldehyde	7.5E-02	6.0E-04	6.0E-04	1.1E-03	1.8E-03	1.8E-03	3.4E-03
Hexane	1.8E+00	1.4E-02	1.4E-02	2.7E-02	4.4E-02	4.4E-02	8.2E-02
Indeno(1,2,3-cd)pyrene	1.8E-06	1.4E-08	1.4E-08	2.7E-08	4.4E-08	4.4E-08	8.2E-08
Naphthalene	6.1E-04	4.9E-06	4.9E-06	9.1E-06	1.5E-05	1.5E-05	2.8E-05
Phenanathrene	1.7E-05	1.4E-07	1.4E-07	2.5E-07	4.1E-07	4.1E-07	7.7E-07
Pyrene	5.0E-06	4.0E-08	4.0E-08	7.5E-08	1.2E-07	1.2E-07	2.3E-07
Toluene	3.4E-03	2.7E-05	2.7E-05	5.1E-05	8.3E-05	8.3E-05	1.5E-04
Arsenic	2.0E-04	1.6E-06	1.6E-06	3.0E-06	4.9E-06	4.9E-06	9.1E-06
Beryllium	1.2E-05	9.6E-08	9.6E-08	1.8E-07	2.9E-07	2.9E-07	5.4E-07
Cadmium	1.1E-03	8.8E-06	8.8E-06	1.6E-05	2.7E-05	2.7E-05	5.0E-05
Chromium	1.4E-03	1.1E-05	1.1E-05	2.1E-05	3.4E-05	3.4E-05	6.3E-05
Cobalt	8.4E-05	6.7E-07	6.7E-07	1.3E-06	2.0E-06	2.0E-06	3.8E-06
Manganese	3.8E-04	3.1E-06	3.1E-06	5.7E-06	9.2E-06	9.2E-06	1.7E-05
Mercury	2.6E-04	2.1E-06	2.1E-06	3.9E-06	6.3E-06	6.3E-06	1.2E-05
Nickel	2.1E-03	1.7E-05	1.7E-05	3.1E-05	5.1E-05	5.1E-05	9.5E-05
Selenium	2.4E-05	1.9E-07	1.9E-07	3.6E-07	5.8E-07	5.8E-07	1.1E-06

Source: AP-42, Tables 1.4-3 and 1.4-4, 7/98 edition.

Notes: Emissions based on north and south space heaters operating at 8.25 MMBTU/hr, and east space heater operating at 15.4 MMBTu/hr.  
Assumed 1,027 BTU/scf heat content of natural gas.  
Emissions based on 6,048 hours of operation for each dryer.

## HAZARDOUS AIR POLLUTANT CALCULATIONS

**TABLE 1. SECONDARY DRYER - NON-CARCINOGENS**  
**NATURAL GAS**

Pollutant	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)
2-Methylnaphthalene	2.4E-05	1.3E-08	5.6E-08
3-Methylchloranthrene	1.8E-06	9.6E-10	4.2E-09
7,12-Dimethyl-benz(a)anthracene	1.6E-05	8.6E-09	3.8E-08
Acenapthene	1.8E-06	9.6E-10	4.2E-09
Anthracene	2.4E-06	1.3E-09	5.6E-09
Benz(a)anthracene	1.8E-06	9.6E-10	4.2E-09
Benzene	2.1E-03	1.1E-06	4.9E-06
Benzo(a)pyrene	1.2E-06	6.4E-10	2.8E-09
Benzo(b)fluoranthene	1.8E-06	9.6E-10	4.2E-09
Benzo(g,h,i)perylene	1.2E-06	6.4E-10	2.8E-09
Benzo(k)fluoranthene	1.8E-06	9.6E-10	4.2E-09
Chrysene	1.8E-06	9.6E-10	4.2E-09
Dibenzo(a,h)anthracene	1.2E-06	6.4E-10	2.8E-09
Dichlorobenzene	1.2E-03	6.4E-07	2.8E-06
Fluoranthene	3.0E-06	1.6E-09	7.0E-09
Fluorene	2.8E-06	1.5E-09	6.6E-09
Formaldehyde	7.5E-02	4.0E-05	1.8E-04
Hexane	1.8E+00	9.6E-04	4.2E-03
Indeno(1,2,3-cd)pyrene	1.8E-06	9.6E-10	4.2E-09
Naphthalene	6.1E-04	3.3E-07	1.4E-06
Phenanathrene	1.7E-05	9.1E-09	4.0E-08
Pyrene	5.0E-06	2.7E-09	1.2E-08
Toluene	3.4E-03	1.8E-06	8.0E-06
Arsenic	2.0E-04	1.1E-07	4.7E-07
Beryllium	1.2E-05	6.4E-09	2.8E-08
Cadmium	1.1E-03	5.9E-07	2.6E-06
Chromium	1.4E-03	7.5E-07	3.3E-06
Cobalt	8.4E-05	4.5E-08	2.0E-07
Manganese	3.8E-04	2.0E-07	8.9E-07
Mercury	2.6E-04	1.4E-07	6.1E-07
Nickel	2.1E-03	1.1E-06	4.9E-06
Selenium	2.4E-05	1.3E-08	5.6E-08
Source: AP-42, Tables 1.4-3 and 1.4-4, 7/98 edition.		0.0E+00	0.0E+00

Notes: Emissions based on dryer operating at a maximum rate of 0.55 MMBTU/hr.

Assumed 1,027 BTU/scf heat content of natural gas.

Emissions based on 8,760 hours of operation for each dryer.

## HAZARDOUS AIR POLLUTANT CALCULATIONS

**TABLE 1. MISC. SPACE HEATERS - NON-CARCINOGENS**

<b>Pollutant</b>	<b>NATURAL GAS</b>		
	<b>Emission Factor (lb/1,000,000 scf)</b>	<b>Emissions (lb/hr)</b>	<b>Emissions (tons/yr)</b>
2-Methylnaphthalene	2.4E-05	4.7E-08	1.4E-07
3-Methylchloranthrene	1.8E-06	3.5E-09	1.1E-08
7,12-Dimethyl-benz(a)anthracene	1.6E-05	3.1E-08	9.4E-08
Acenapthene	1.8E-06	3.5E-09	1.1E-08
Anthracene	2.4E-06	4.7E-09	1.4E-08
Benz(a)anthracene	1.8E-06	3.5E-09	1.1E-08
Benzene	2.1E-03	4.1E-06	1.2E-05
Benzo(a)pyrene	1.2E-06	2.3E-09	7.1E-09
Benzo(b)fluoranthene	1.8E-06	3.5E-09	1.1E-08
Benzo(g,h,i)perylene	1.2E-06	2.3E-09	7.1E-09
Benzo(k)fluoranthene	1.8E-06	3.5E-09	1.1E-08
Chrysene	1.8E-06	3.5E-09	1.1E-08
Dibenzo(a,h)anthracene	1.2E-06	2.3E-09	7.1E-09
Dichlorobenzene	1.2E-03	2.3E-06	7.1E-06
Fluoranthene	3.0E-06	5.8E-09	1.8E-08
Fluorene	2.8E-06	5.5E-09	1.6E-08
Formaldehyde	7.5E-02	1.5E-04	4.4E-04
Hexane	1.8E+00	3.5E-03	1.1E-02
Indeno(1,2,3-cd)pyrene	1.8E-06	3.5E-09	1.1E-08
Naphthalene	6.1E-04	1.2E-06	3.6E-06
Phenanathrene	1.7E-05	3.3E-08	1.0E-07
Pyrene	5.0E-06	9.7E-09	2.9E-08
Toluene	3.4E-03	6.6E-06	2.0E-05
Arsenic	2.0E-04	3.9E-07	1.2E-06
Beryllium	1.2E-05	2.3E-08	7.1E-08
Cadmium	1.1E-03	2.1E-06	6.5E-06
Chromium	1.4E-03	2.7E-06	8.2E-06
Cobalt	8.4E-05	1.6E-07	4.9E-07
Manganese	3.8E-04	7.4E-07	2.2E-06
Mercury	2.6E-04	5.1E-07	1.5E-06
Nickel	2.1E-03	4.1E-06	1.2E-05
Selenium	2.4E-05	4.7E-08	1.4E-07

Source: AP-42, Tables 1.4-3 and 1.4-4, 7/98 edition.

Notes: Emissions based on heaters operating at an aggregate maximum rate of 2 MMBTU/hr.

Assumed 1,027 BTU/scf heat content of natural gas.

Emissions based on 6,048 hours of operation for each dryer.

## TOXIC AIR POLLUTANTS CALCULATIONS

**TABLE 1. FLUID BED DRYER - NON-CARCINOGENS**

Pollutant	NATURAL GAS			
	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Barium	4.4E-03	3.0E-05	1.3E-04	3.8E-06
Chromium	1.4E-03	9.5E-06	4.2E-05	1.2E-06
Cobalt	8.4E-05	5.7E-07	2.5E-06	7.2E-08
Copper	8.5E-04	5.8E-06	2.5E-05	7.3E-07
Ethylbenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Fluoride	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Hexane	1.8E+00	1.2E-02	5.4E-02	1.5E-03
Manganese	3.8E-04	2.6E-06	1.1E-05	3.3E-07
Mercury	2.6E-04	1.8E-06	7.8E-06	2.2E-07
Molybdenum	1.1E-03	7.5E-06	3.3E-05	9.4E-07
Naphthalene	6.1E-04	4.2E-06	1.8E-05	5.2E-07
Pentane	2.6E+00	1.8E-02	7.8E-02	2.2E-03
Phosphorous	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Selenium	2.4E-05	1.6E-07	7.2E-07	2.1E-08
Toluene	3.4E-03	2.3E-05	1.0E-04	2.9E-06
o-Xylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Zinc	2.9E-02	2.0E-04	8.7E-04	2.5E-05

**TABLE 2. FLUID BED DRYER - CARCINOGENS**

Pollutant	NATURAL GAS			
	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Arsenic	2.00E-04	1.4E-06	6.0E-06	1.7E-07
Benzene	2.1E-03	1.4E-05	6.3E-05	1.8E-06
Beryllium	1.20E-05	8.2E-08	3.6E-07	1.0E-08
Cadmium	1.10E-03	7.5E-06	3.3E-05	9.4E-07
Chromium VI	0.00E+00	0.0E+00	0.0E+00	0.0E+00
Formaldehyde	7.5E-02	5.1E-04	2.2E-03	6.4E-05
Nickel	2.1E-03	1.4E-05	6.3E-05	1.8E-06
Benzo(a)pyrene	1.2E-06	8.2E-09	3.6E-08	1.0E-09
Benz(a)anthracene	1.8E-06	1.2E-08	5.4E-08	1.5E-09
Benzo(b)fluoranthene	1.8E-06	1.2E-08	5.4E-08	1.5E-09
Benzo(k)fluoranthene	1.8E-06	1.2E-08	5.4E-08	1.5E-09
Chrysene	1.8E-06	1.2E-08	5.4E-08	1.5E-09
Dibenzo(a,h)anthracene	1.2E-06	8.2E-09	3.6E-08	1.0E-09
Indeno(1,2,3-cd)pyrene	1.8E-06	1.2E-08	5.4E-08	1.5E-09
Total PAHs	1.1E-05	7.8E-08	3.4E-07	9.8E-09

Source: AP-42 Tables 1.4-3 and 1.4-4, 7/98.

Notes: Emissions based on two Maxon burners operating at maximum rate of 3.5 MMBTU/hr.

Assumed 1,027 BTU/scf heat content of natural gas.

Emissions based on 8,760 hours of operation.

### TOXIC AIR POLLUTANT CALCULATIONS

**TABLE 1. BOILER #4 - NON-CARCINOGENS**  
**FUEL OIL**

Pollutant	Emission Factor (lb/1,000 gal)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Antimony	5.25E-03	3.41E-03	1.49E-02	4.30E-04
Barium	2.57E-03	1.67E-03	7.32E-03	2.10E-04
Chromium	8.45E-04	5.49E-04	2.41E-03	6.92E-05
Cobalt	6.02E-03	3.91E-03	1.71E-02	4.93E-04
Copper	1.76E-03	1.14E-03	5.01E-03	1.44E-04
Ethylbenzene	6.36E-05	4.13E-05	1.81E-04	5.21E-06
Fluoride	3.73E-02	2.42E-02	1.06E-01	3.05E-03
Hexane	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	3.00E-03	1.95E-03	8.54E-03	2.46E-04
Mercury	3*	4.E-04	2.E-03	5.E-05
Moybdenum	7.87E-04	5.12E-04	2.24E-03	6.45E-05
Naphthalene	1.13E-03	7.35E-04	3.22E-03	9.25E-05
Pentane	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Phosphorous	9.46E-03	6.15E-03	2.69E-02	7.75E-04
Selenium	15*	2.1E-03	9.2E-03	2.6E-04
Toluene	6.20E-03	4.03E-03	1.77E-02	5.08E-04
o-Xylene	1.09E-04	7.09E-05	3.10E-04	8.93E-06
Zinc	2.91E-02	1.89E-02	8.28E-02	2.38E-03

**TABLE 2. BOILER #4 - CARCINOGENS**  
**FUEL OIL**

Pollutant	Emission Factor (lb/1,000 gal)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Arsenic	1.32E-03	8.58E-04	3.76E-03	1.08E-04
Benzene	2.14E-04	1.39E-04	6.09E-04	1.75E-05
Beryllium	3*	4.E-04	2.E-03	5.E-05
Cadmium	3.98E-04	2.59E-04	1.13E-03	3.26E-05
Chromium VI	2.48E-04	1.61E-04	7.06E-04	2.03E-05
Formaldehyde	3.30E-02	2.15E-02	9.40E-02	2.70E-03
Nickel	8.45E-02	5.49E-02	2.41E-01	6.92E-03
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Benzo(a)pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benz(a)anthracene	4.01E-06	2.61E-06	1.14E-05	3.28E-07
Benzo(b,k)fluoranthene	1.48E-06	9.62E-07	4.21E-06	1.21E-07
Chrysene	2.38E-06	1.55E-06	6.78E-06	1.95E-07
Dibenzo(a,h)anthracene	1.67E-06	1.09E-06	4.75E-06	1.37E-07
Indeno(1,2,3-cd)pyrene	2.14E-06	1.39E-06	6.09E-06	1.75E-07
Total PAHs	1.17E-05	7.59E-06	3.33E-05	9.57E-07

Notes: \* Emission factor units in pounds per 1,000,000 MMBTU.

Emission estimates represent maximum emissions based on burning #2, #4, #5, or #6 fuel oil, and based on AP-42 Tables 1.3-9, 1.3-10, and 1.3-11.

Emissions based on boiler operating with maximum fuel usage of 650 gal/hour.

Emissions based on 8,760 hours of operation.

**TOXIC AIR POLLUTANT CALCULATIONS**  
**TABLE 3. BOILER #4 - NON-CARCINOGENS**

NATURAL GAS				
Pollutant	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Barium	4.4E-03	6.0E-04	2.6E-03	7.6E-05
Chromium	1.4E-03	1.9E-04	8.4E-04	2.4E-05
Cobalt	8.4E-05	1.1E-05	5.0E-05	1.4E-06
Copper	8.5E-04	1.2E-04	5.1E-04	1.5E-05
Ethylbenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Fluoride	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Hexane	1.8E+00	2.5E-01	1.1E+00	3.1E-02
Manganese	3.8E-04	5.2E-05	2.3E-04	6.5E-06
Mercury	2.6E-04	3.5E-05	1.6E-04	4.5E-06
Molybdenum	1.1E-03	1.5E-04	6.6E-04	1.9E-05
Naphthalene	6.1E-04	8.3E-05	3.6E-04	1.0E-05
Pentane	2.6E+00	3.5E-01	1.6E+00	4.5E-02
Phosphorous	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Selenium	2.4E-05	3.3E-06	1.4E-05	4.1E-07
Toluene	3.4E-03	4.6E-04	2.0E-03	5.8E-05
o-Xylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Zinc	2.9E-02	4.0E-03	1.7E-02	5.0E-04

**TABLE 4. BOILER #4 - CARCINOGENS**  
**NATURAL GAS**

Pollutant	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Arsenic	2.0E-04	2.7E-05	1.2E-04	3.4E-06
Benzene	2.1E-03	2.9E-04	1.3E-03	3.6E-05
Beryllium	1.2E-05	1.6E-06	7.2E-06	2.1E-07
Cadmium	1.1E-03	1.5E-04	6.6E-04	1.9E-05
Chromium VI	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Formaldehyde	7.5E-02	1.0E-02	4.5E-02	1.3E-03
Nickel	2.1E-03	2.9E-04	1.3E-03	3.6E-05
Benzo(a)pyrene	1.2E-06	1.6E-07	7.2E-07	2.1E-08
Benz(a)anthracene	1.8E-06	2.5E-07	1.1E-06	3.1E-08
Benzo(b)fluoranthene	1.8E-06	2.5E-07	1.1E-06	3.1E-08
Benzo(k)fluoranthene	1.8E-06	2.5E-07	1.1E-06	3.1E-08
Chrysene	1.8E-06	2.5E-07	1.1E-06	3.1E-08
Dibenzo(a,h)anthracene	1.2E-06	1.6E-07	7.2E-07	2.1E-08
Indeno(1,2,3-cd)pyrene	1.8E-06	2.5E-07	1.1E-06	3.1E-08
Total PAHs	1.1E-05	1.6E-06	6.8E-06	2.0E-07

Notes: Emissions based on boiler operating at maximum rate of 140 MMBTU/hr.

Assumed 1,027 BTU/scf heat content of natural gas.

Emissions based on 8,760 hours of operation.

Source: AP-42 Tables 1.4-3 and 1.4-4, 7/98.

## TOXIC AIR POLLUTANT CALCULATIONS

**TABLE 1. BOILER #3 - NON-CARCINOGENS**

FUEL OIL				
Pollutant	Emission Factor (lb/1,000 gal)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Antimony	5.25E-03	1.05E-03	1.67E-03	1.32E-04
Barium	2.57E-03	5.14E-04	8.19E-04	6.48E-05
Chromium	8.45E-04	1.69E-04	2.69E-04	2.13E-05
Cobalt	6.02E-03	1.20E-03	1.92E-03	1.52E-04
Copper	1.76E-03	3.52E-04	5.61E-04	4.44E-05
Ethylbenzene	6.36E-05	1.27E-05	2.03E-05	1.60E-06
Fluoride	3.73E-02	7.46E-03	1.19E-02	9.40E-04
Hexane	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	3.00E-03	6.00E-04	9.56E-04	7.56E-05
Mercury	3*	1.E-04	2.E-04	2.E-05
Molybdenum	7.87E-04	1.57E-04	2.51E-04	1.98E-05
Naphthalene	1.13E-03	2.26E-04	3.60E-04	2.85E-05
Pentane	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Phosphorous	9.46E-03	1.89E-03	3.01E-03	2.38E-04
Selenium	15*	6.5E-04	1.0E-03	8.1E-05
Toluene	6.20E-03	1.24E-03	1.97E-03	1.56E-04
o-Xylene	1.09E-04	2.18E-05	3.47E-05	2.75E-06
Zinc	2.91E-02	5.82E-03	9.27E-03	7.33E-04

**TABLE 2. BOILER #3 - CARCINOGENS**

FUEL OIL				
Pollutant	Emission Factor (lb/1,000 gal)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Arsenic	1.32E-03	2.64E-04	4.20E-04	3.33E-05
Benzene	2.14E-04	4.28E-05	6.82E-05	5.39E-06
Beryllium	3*	1.E-04	2.E-04	2.E-05
Cadmium	3.98E-04	7.96E-05	1.27E-04	1.00E-05
Chromium VI	2.48E-04	4.96E-05	7.90E-05	6.25E-06
Formaldehyde	3.30E-02	6.60E-03	1.05E-02	8.32E-04
Nickel	8.45E-02	1.69E-02	2.69E-02	2.13E-03
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Benzo(a)pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benz(a)anthracene	4.01E-06	8.02E-07	1.28E-06	1.01E-07
Benzo(b,k)fluoranthene	1.48E-06	2.96E-07	4.71E-07	3.73E-08
Chrysene	2.38E-06	4.76E-07	7.58E-07	6.00E-08
Dibenzo(a,h)anthracene	1.67E-06	3.34E-07	5.32E-07	4.21E-08
Indeno(1,2,3-cd)pyrene	2.14E-06	4.28E-07	6.82E-07	5.39E-08
Total PAHs	1.17E-05	2.34E-06	3.72E-06	2.94E-07

Notes: \* Emission factor units in pounds per 1,000,000 MMBTU.  
 Emission estimates represent maximum emissions based on burning #2, #4, #5, or #6 fuel oil, and based on AP-42 Tables 1.3-9, 1.3-10, and 1.3-11.  
 Emissions based on boiler operating with maximum fuel usage of 200 gal/hour.  
 Emissions based on 3,185 hours of operation.

**TOXIC AIR POLLUTANT CALCULATIONS**  
**TABLE 3. BOILER #3 - NON-CARCINOGENS**

NATURAL GAS				
Pollutant	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Barium	4.4E-03	1.8E-04	2.9E-04	2.3E-05
Chromium	1.4E-03	5.9E-05	9.3E-05	7.4E-06
Cobalt	8.4E-05	3.5E-06	5.6E-06	4.4E-07
Copper	8.5E-04	3.6E-05	5.7E-05	4.5E-06
Ethylbenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Fluoride	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Hexane	1.8E+00	7.5E-02	1.2E-01	9.5E-03
Manganese	3.8E-04	1.6E-05	2.5E-05	2.0E-06
Mercury	2.6E-04	1.1E-05	1.7E-05	1.4E-06
Molybdenum	1.1E-03	4.6E-05	7.3E-05	5.8E-06
Naphthalene	6.1E-04	2.6E-05	4.1E-05	3.2E-06
Pentane	2.6E+00	1.1E-01	1.7E-01	1.4E-02
Phosphorous	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Selenium	2.4E-05	1.0E-06	1.6E-06	1.3E-07
Toluene	3.4E-03	1.4E-04	2.3E-04	1.8E-05
o-Xylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Zinc	2.9E-02	1.2E-03	1.9E-03	1.5E-04

**TABLE 4. BOILER #3 - CARCINOGENS**

NATURAL GAS				
Pollutant	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Arsenic	2.0E-04	8.4E-06	1.3E-05	1.1E-06
Benzene	2.1E-03	8.8E-05	1.4E-04	1.1E-05
Beryllium	1.2E-05	5.0E-07	8.0E-07	6.3E-08
Cadmium	1.1E-03	4.6E-05	7.3E-05	5.8E-06
Chromium VI	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Formaldehyde	7.5E-02	3.1E-03	5.0E-03	4.0E-04
Nickel	2.1E-03	8.8E-05	1.4E-04	1.1E-05
Benzo(a)pyrene	1.2E-06	5.0E-08	8.0E-08	6.3E-09
Benz(a)anthracene	1.8E-06	7.5E-08	1.2E-07	9.5E-09
Benzo(b)fluoranthene	1.8E-06	7.5E-08	1.2E-07	9.5E-09
Benzo(k)fluoranthene	1.8E-06	7.5E-08	1.2E-07	9.5E-09
Chrysene	1.8E-06	7.5E-08	1.2E-07	9.5E-09
Dibenzo(a,h)anthracene	1.2E-06	5.0E-08	8.0E-08	6.3E-09
Indeno(1,2,3-cd)pyrene	1.8E-06	7.5E-08	1.2E-07	9.5E-09
Total PAHs	1.1E-05	4.8E-07	7.6E-07	6.0E-08

Notes: Emissions based on boiler operating at maximum rate of 43.03 MMBTU/hr.

Assumed 1,027 BTU/scf heat content of natural gas.

Emissions based on 3,185 hours of operation.

Source: AP-42 Tables 1.4-3 and 1.4-4, 7/98.





## TOXIC AIR POLLUTANT CALCULATIONS

**TABLE 1. SECONDARY DRYER - NON-CARCINOGENS**  
**NATURAL GAS**

Pollutant	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Barium	4.4E-03	2.4E-06	1.0E-05	3.0E-07
Chromium	1.4E-03	7.5E-07	3.3E-06	9.4E-08
Cobalt	8.4E-05	4.5E-08	2.0E-07	5.7E-09
Copper	8.5E-04	4.6E-07	2.0E-06	5.7E-08
Ethylbenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Fluoride	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Hexane	1.8E+00	9.6E-04	4.2E-03	1.2E-04
Manganese	3.8E-04	2.0E-07	8.9E-07	2.6E-08
Mercury	2.6E-04	1.4E-07	6.1E-07	1.8E-08
Molybdenum	1.1E-03	5.9E-07	2.6E-06	7.4E-08
Naphthalene	6.1E-04	3.3E-07	1.4E-06	4.1E-08
Pentane	2.6E+00	1.4E-03	6.1E-03	1.8E-04
Phosphorous	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Selenium	2.4E-05	1.3E-08	5.6E-08	1.6E-09
Toluene	3.4E-03	1.8E-06	8.0E-06	2.3E-07
o-Xylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Zinc	2.9E-02	1.6E-05	6.8E-05	2.0E-06

**TABLE 2. SECONDARY DRYER - CARCINOGENS**  
**NATURAL GAS**

Pollutant	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Arsenic	2.0E-04	1.1E-07	4.7E-07	1.3E-08
Benzene	2.1E-03	1.1E-06	4.9E-06	1.4E-07
Beryllium	1.2E-05	6.4E-09	2.8E-08	8.1E-10
Cadmium	1.1E-03	5.9E-07	2.6E-06	7.4E-08
Chromium VI	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Formaldehyde	7.5E-02	4.0E-05	1.8E-04	5.1E-06
Nickel	2.1E-03	1.1E-06	4.9E-06	1.4E-07
Benzo(a)pyrene	1.2E-06	6.4E-10	2.8E-09	8.1E-11
Benz(a)anthracene	1.8E-06	9.6E-10	4.2E-09	1.2E-10
Benzo(b)fluoranthene	1.8E-06	9.6E-10	4.2E-09	1.2E-10
Benzo(k)fluoranthene	1.8E-06	9.6E-10	4.2E-09	1.2E-10
Chrysene	1.8E-06	9.6E-10	4.2E-09	1.2E-10
Dibenzo(a,h)anthracene	1.2E-06	6.4E-10	2.8E-09	8.1E-11
Indeno(1,2,3-cd)pyrene	1.8E-06	9.6E-10	4.2E-09	1.2E-10
Total PAHs	1.1E-05	6.1E-09	2.7E-08	7.7E-10

Notes: Emissions based on dryer operating at a maximum rate of 0.55 MMBTU/hr.

Assumed 1,027 BTU/scf heat content of natural gas.

Emissions based on 8,760 hours of operation for each dryer.

Source: AP-42 Tables 1.4-3 and 1.4-4, 7/98.

## TOXIC AIR POLLUTANT CALCULATIONS

**TABLE 1. MISC. SPACE HEATERS - NON-CARCINOGENS**

<b>NATURAL GAS</b>				
Pollutant	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Barium	4.4E-03	8.6E-06	2.6E-05	1.1E-06
Chromium	1.4E-03	2.7E-06	8.2E-06	3.4E-07
Cobalt	8.4E-05	1.6E-07	4.9E-07	2.1E-08
Copper	8.5E-04	1.7E-06	5.0E-06	2.1E-07
Ethylbenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Fluoride	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Hexane	1.8E+00	3.5E-03	1.1E-02	4.4E-04
Manganese	3.8E-04	7.4E-07	2.2E-06	9.3E-08
Mercury	2.6E-04	5.1E-07	1.5E-06	6.4E-08
Molybdenum	1.1E-03	2.1E-06	6.5E-06	2.7E-07
Naphthalene	6.1E-04	1.2E-06	3.6E-06	1.5E-07
Pentane	2.6E+00	5.1E-03	1.5E-02	6.4E-04
Phosphorous	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Selenium	2.4E-05	4.7E-08	1.4E-07	5.9E-09
Toluene	3.4E-03	6.6E-06	2.0E-05	8.3E-07
o-Xylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Zinc	2.9E-02	5.6E-05	1.7E-04	7.1E-06

**TABLE 2. MISC. SPACE HEATERS - CARCINOGENS**

<b>NATURAL GAS</b>				
Pollutant	Emission Factor (lb/1,000,000 scf)	Emissions (lb/hr)	Emissions (tons/yr)	Emissions (grams/sec)
Arsenic	2.0E-04	3.9E-07	1.2E-06	4.9E-08
Benzene	2.1E-03	4.1E-06	1.2E-05	5.2E-07
Beryllium	1.2E-05	2.3E-08	7.1E-08	2.9E-09
Cadmium	1.1E-03	2.1E-06	6.5E-06	2.7E-07
Chromium VI	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Formaldehyde	7.5E-02	1.5E-04	4.4E-04	1.8E-05
Nickel	2.1E-03	4.1E-06	1.2E-05	5.2E-07
Benzo(a)pyrene	1.2E-06	2.3E-09	7.1E-09	2.9E-10
Benz(a)anthracene	1.8E-06	3.5E-09	1.1E-08	4.4E-10
Benzo(b)fluoranthene	1.8E-06	3.5E-09	1.1E-08	4.4E-10
Benzo(k)fluoranthene	1.8E-06	3.5E-09	1.1E-08	4.4E-10
Chrysene	1.8E-06	3.5E-09	1.1E-08	4.4E-10
Dibenz(a,h)anthracene	1.2E-06	2.3E-09	7.1E-09	2.9E-10
Indeno(1,2,3-cd)pyrene	1.8E-06	3.5E-09	1.1E-08	4.4E-10
Total PAHs	1.1E-05	2.2E-08	6.7E-08	2.8E-09

Notes: Emissions based on heaters operating at an aggregate maximum rate of 2 MMBTU/hr.

Assumed 1,027 BTU/scf heat content of natural gas.

Emissions based on 6,048 hours of operation for each dryer.

Source: AP-42 Tables 1.4-3 and 1.4-4, 7/98.